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CROONIAN LECTURE.—“On the Coagulation of the Blood.”

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(Abstract.)

1. As to the relation of the corpuscular elements of the blood to coagulation. The plasma itself contains all the elements necessary for coagulation.

The white blood corpuscles probably aid coagulation to a certain extent, but their influence is entirely secondary.

The really important factor in initiating coagulation is a substance dissolved in the plasma, discovered by the author, and called by him A-fibrinogen. Lymph cells differ from white blood corpuscles; they are very active in inducing coagulation.

2. As to the chemical processes of coagulation, the author considers there are three coagulable bodies present in the plasma. These he names A-, B-, and C-fibrinogen.\* They are closely allied to one another, and are not separated by a sharp line from one another.

C-fibrinogen is identical with the body which has hitherto been known as fibrinogen, but it is only present in minimal quantities in blood plasma; it is coagulable with fibrin ferment. The bulk of the coagulable matter of the plasma is B-fibrinogen; it clots on the addition of lecithin; it does not clot with fibrin ferment; it clots with leucocytes from lymph glands.

A-fibrinogen is separable from the plasma by cooling; it separates as minute, regular, rounded granules; it is not coagulable by fibrin ferment.

A- and B-fibrinogen are compounds of proteid and lecithin. The

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\* These names are provisional.

essential point in the coagulation of the blood is a loss of lecithin on the part of A-fibrinogen, and a gain of lecithin on the part of B-fibrinogen. A-fibrinogen loses some of its lecithin to B-fibrinogen, and the result is that in the place of the two fibrinogens we have fibrin. Previous authors have all regarded coagulation as essentially a fermentative process.

The author regards the fibrin ferment as purely subsidiary, and considers that coagulation is nearly allied to crystallisation.

3. In the fluid of lymph glands from which all the cellular elements have been removed, another form of fibrinogen exists closely allied to and probably the precursor of the A-fibrinogen of the blood. It differs from the latter in causing intravascular clotting,\* whereas A-fibrinogen only causes under normal conditions clotting in shed blood.

It is a proteid-lecithin compound, and its action can be shown to depend on the lecithin it contains. It has a wide distribution apart from lymph glands.

In the fluid of serous cavities of certain animals, the only coagulable body present is C-fibrinogen, and since the blood of these animals contains both A- and B-fibrinogen, the vascular wall either only allows C-fibrinogen to pass, or changes A- and B-fibrinogen into C-fibrinogen in their passage through.

\* *Vide* "Proc. Roy. Soc.," vol. 40, p. 134.



